Final Project Report to the NYS IPM Program, Agricultural IPM 2000 -2001

2001 REQUEST FOR FUNDING THRIPS BIOLOGICAL CONTROL DEMONSTRATION IN ORANGE AND ULSTER COUNTIES

Project Leader(s):
Rose Baglia, Extension Educator CCE Orange Co., Commercial Horticulture; Teresa Rusinek, Extension Educator CCE Ulster Co., Commercial Horticulture; Gary Couch, NYS IPM Ornamentals Specialist

Cooperator(s): John Sanderson, Associate Professor, Entomology; Margery L. Daughtrey, Senior Extension Associate, Plant Pathology. Deborah Sweeton, Techni-Growers Greenhouses, John Gill – Gill Farms, Robin and Drew Anderson – Country Flowers

Type of grant: • Biological control and pest biology

Project location(s): Orange and Ulster Counties.

Abstract:

The use of predacious mites for western flower thrips control in bedding plant production was demonstrated and release timing examined. Cost and efficacy comparisons were made between using a standard, calendar-based release program and one based on monitoring thrips levels. Acceptable thrips control was achieved with both methods but monitoring reduced costs by over 50%. Two new growers were introduced to using predacious mites for thrips control. Methods and results were presented to growers through two NY regional conferences and a national conference along with two newsletter articles. Data was also presented to CCE agents at a statewide in-service program.

Background and justification:

Western Flower Thrips can cause serious economic damage by direct feeding and by transmitting Impatiens Necrotic Spot Virus or Tomato Spotted Wilt Virus and are a difficult pest to kill. With increasing government regulations concerning environmental and worker safety, fewer chemical controls are available to growers and longer re-entry intervals have been established. The predators we used have no re-entry interval and can reduce the number and frequency of pesticide applications - helping to delay the onset of resistance to Conserve and other products. Many growers are unfamiliar with biological controls and perceive that biologicals give unreliable results. In fact, there are many "unknowns" about the best way to use biologicals as part of a comprehensive IPM plan. Our goals are to help growers to produce a high quality crop by effectively controlling thrips; reduce dependence on chemical pesticides and work out the details of how growers can use biologicals in a cost effective manner.

8. Objectives:

1. **Expand *N. cucumeris* thrips control demonstration using sprinkle release method to two production greenhouses in Ulster County.**

2. **Improve the economics of using *N. cucumeris.***

3. **Educate local growers on the use of biological controls.**

9. Procedures:

1) *N. cucumeris* was introduced to an approximately 2500 sq.ft. production space at each of two greenhouse businesses in Ulster County. Greenhouses were scouted and data collected every two weeks. Staff met and consulted regularly with participating growers and cooperating researchers. Predators were released as soon as plants were in the greenhouse (late February-early March) and continued into late April.

2) Two houses with similar crop mixes were set up at an Orange Co. greenhouse business. In one house, predators were released by sprinkling a commercially available product over the crop canopy at a rate of 17-25 predators per sq.ft. every two weeks (or 50,000 *N. cucumeris* per 2500 sq.ft. house every two weeks). In the second house, predator release was delayed until thrips populations reached an average of 5 per sticky card (10 yellow sticky cards per house). The cost of application and efficacy under each was compared.

3) Results and updates were featured in extension publications such as Greenhouse Crop Management News and Hudson Valley Horticulture. Final results will be published in these newsletters and in Northeast Greenhouse IPM Notes.

10. Results and discussion:

1) At one location in Ulster Co., thrips levels were low (basically zero) when releases began. At the second location, thrips levels were very high when releases began. The grower at location one regularly uses conventional control products, while location 2 grower tends to use " soft" materials such as soap and oil on a regular basis.

Thrips levels at location one remained very low throughout the bedding plants season. No sprays for thrips were needed. This grower normally would have applied granular Marathon to the geranium crop and followed up with several Orthene sprays during the season. During the course of the demonstration, the grower did not apply Marathon and only spot sprayed once with Orthene for aphid control.

When asked if the grower at location 1 would use the thrips predators on his own, he indicated that he would if it was cost effective. The cost of the cucumeris was also a concern for the second grower.

The second grower, who does not use conventional pesticides, is interested in using cucumeris however, under a high thrips pressure situation (which he typically has), he

did not achieve much, if any, control using cucumeris. This grower would likely have better results using a "soft" material, such as Spintor, initially to knock down thrips populations and later releasing cucumeris for maintenance.

3) Results are displayed in Chart 1 and 2. The standard house in Orange Co. received 6 mite releases for a cost of $144.70 (labor not included). Thrips levels remained low throughout the crop cycle until late when a thrips-prone crop (lantana) was brought into the house. Thrips did not appear in the delay house until 3 weeks into the crop cycle and did not reach our stated threshold until week 9. This resulted in only 2 releases being made for a cost of $63.00. Thrips levels in both houses were very low at the end of the season. The grower in Orange Co. has participated in biocontrol projects for several years and has come to rely on predacious mites in the retail portion of the business. In addition to the two production houses used in the project, the grower trialed the mites in a portion of the main production area and was very satisfied with the results.

The two houses in Ulster Co. had slightly higher costs than the standard house in Orange Co. due to a higher release rate. A cost analysis shows that using the cucumeris cost about $175 per site with shipping and handling. The cost for conventional pest control for the grower at location 1 averages about $40 per crop cycle. The relatively high cost of using cucumeris along with its narrow spectrum of pest control would discourage the grower from using it on a regular basis. As thrips were not detected until after the third release the cost would have been 50% lower if the delayed release method had been used.

3) Presentations on Thrips Biocontrol were given at both the Hudson Valley and Capital District Bedding Plant Schools. One grower in the project participated in the presentation at the Hudson Valley BPS. Evaluations taken at the end of the BPS's indicated that most growers spray for thrips twice during the bedding plant season though some (24%) spray more than 8 times. Nearly 80% expressed interest in trying predacious mites (evaluation attached). An article was written and published in Greenhouse Crop Management News and Hudson Valley Horticulture. Professor John Sanderson used the data in his presentation at the Ohio Greenhouse Short Course and at the agent's in-service program during Ag Production Week.

Functional control of thrips in production greenhouses was shown to occur except where thrips populations were high at the outset. This re-emphasizes the need for comprehensive thrips management including incorporating compatible pesticides. The emergence of other pests, particularly aphids and spider mites, can be disruptive to the predators so compatible management needs to be further delineated.

Economically competitive control was achieved through the delayed - release method however this needs to be validated at other sites. A reliable predictive technique, such as using GDD, for thrips activity would be preferable to the reactive method of sticky cards.

Growers have indicated a strong interest in trying predacious mites but cost concerns and confidence remain issues. We hope to continue addressing these issues in future projects.

Hudson Valley Bedding Plant School Evaluation 2001 (partial)

Thrips Biological Control

On average, how many times during bedding plant season (Feb - May) do you spray for thrips?

1-2	9 responses
3	2 responses
4	2 responses
5	1 responses
6	2 responses
8-12	3 responses
10	2 responses

What products do you use?

Marathon WP
Avid, M-Pede
Enstar II, Precision
Attain, Talstar, Duraguard, Avid
Measurol, Conserve, Duraguard
Conserve, Avid, Talstar, Marvick
Insecticidal soap
Using Biological control now
Conserve
Avid, Duraguard, Talstar Soap, Oil
Orthene, PT1100, 1200, Measurol
Never been a problem I thought
Varies
Electrostatic sprayer - Azatin
Avid, Talstar, Thiodan
Safer, Thiodan

How familiar were you with biological control of thrips before today's presentation?

Not familiar 57% (21)

Somewhat familiar 41% (12)

Very familiar 3% (1)

Would you be willing to try biological control of thrips in your own greenhouse?

		Actual #
Yes	79%	26
No	21%	7

Would you think the benefits of using biological controls (less concern about re-entry intervals, having to "suit up" less frequently, etc) outweigh the additional costs, if control is as good or better then using traditional chemicals alone?

		#
Yes	86%	31
No	14%	5

What further information or "assurances" would you need before trying biological control of thrips?

Seeing that it works or may try one small house
Money
Having thrips
Concrete recommendations for how it impacts total pest control - aphids, mites, whitefly, etc.
What if chemical control is needed?
What are chances for control?
What experiences have other growers had
What is possible to tolerance level of thrips?
Specific information about timing to assure most effective control.
Guaranteed conditions (temperature, humidity(favorable to assure what pesticides will destroy beneficials
None - I'm convinced
More knowledge on the subject. Success on lesser insects
Cost
How to integrate with control of other pests
Availability, approx. cost factor of biological control & labor cuts compared to pesticide application.
Personal guidance, scout
A good method or formula to evaluate what kind of

control the beneficials are giving.
Lower cost

Chart 1

DATE	DELAY THRIPS/CARD	RELEASE #	COST (WITH S&H)	STANDARD THRIPS/CARD	RELEASE #	COST (WITH S&H)	COMMENTS
2/22	0	0	$0.00	0	5000	$12.20	no crop in delay house
3/2	0	0	$0.00	0.14	0	$0.00	first cards in delay house
3/8	0	0	$0.00	0.14	10000	$16.00	
3/15	0.17	0	$0.00	0	0	$0.00	
3/22	0.14	0	$0.00	0	25000	$22.00	
3/29	1.00	0	$0.00	0.67	0	$0.00	
4/5	1.70	0	$0.00	0.67	50000	$31.50	
4/12	2.30	0	$0.00	2.30	0	$0.00	16 0f 21 thrips in standard were on 1 card (lantana)
4/19	4.60	50000	$31.50	0.34	50000	$31.50	
4/26	5.80	0	$0.00	1.30	0	$0.00	31 on lantana
5/3	2.00	50000	$31.50	7.00	50000	$31.50	65 on lantana
5/10	2.20	0	$0.00	12.00	0	$0.00	
5/17	0.67	0	$0.00	0.63	0	$0.00	crop moving out
		TOTAL COSTS	$63.00			$144.70	

Chart 2

DATE	Location 1 - Thrips/ Card	RELEASE #	COST (WITH S&H)	Comments
22-Feb				cards placed in grnhse w/ crop &heat
1-Mar	0	50,000	$31.50	Dracena, vinca, z&I ger.
15-Mar	0	50,000	$31.50	
29-Mar	0	50,000	$31.50	many thrips found on weeds, a few found on ivy on bench nex
11-Apr	0.25	75,000	$46.25	Aphids found on ivy
27-Apr	0.14	75,000	$46.25	
4-May	0.40	0	$0.00	crop moving out
		TOTAL COSTS	$187.00	

	Location 2 Thrips/Card	RELEASE #	COST (WITH S&H)	COMMENTS
1-Mar	cards set up	25,000	$22.00	C many thrips found on plants /spray soap and oil
15-Mar		50,000	$31.50	same
29-Mar	25	50,000	$31.50	same
11-Apr	13.5	75,000	$46.25	oil &soapweek before
27-Apr	33.6	75,000	$46.25	same
4-May	21	0	$0.00	last visit

$177.50